Short Communications

The Dingo as a Possible Factor in the Disappearance of *Gallinula mortierii* from the Australian Mainland

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Though recorded from numerous localities in Australia during the late Tertiary and Quaternary (Baird 1984, 1985, 1986, 1991; McNamara & Baird 1991) the Tasmanian Native-hen *Gallinula mortierii* is today restricted (in the wild state) to Tasmania. Baird (1984) hypothesised that the species' extermination from the mainland resulted from the unpredictability and intensity of aridity following the height of the last glacial period (approximately 18 000 yBP) The hypothesis relies on the lack of deposits containing this species after 12 000 yBP.

In Baird's (1984) hypothesis the Dingo *Canis familiaris dingo*, with an earliest known occurrence of 3450 ± 95 yBP (ANU 807: Milham & Thompson 1976), had no role to play. Recently, however, a radiocarbon date of 4670 ± 90 yBP (NZA 700) has been obtained on a tibiotarsus identified as *Gallinula mortierii* from Amphitheatre Cave (G-2, Matthews 1985) in Lower Glenelg National Park, southwestern Victoria. The date was made on the organic fraction of the bone (d13C: -23.42 per mille). In the light of this new evidence, a review of the previous hypothesis seems appropriate.

In espousing climatic change as the most likely cause of the extinction of *Gallinula mortierii* on the Australian mainland, Baird (1984) tended to discount native carnivores (such as *Thylacoleo*, *Thylacinus*, *Sarcophilus*, etc.) because *Gallinula mortierii* had co-existed with them for at least four million years (*Gallinula mortierii* is present in the Chinchilla deposits [Olson 1976], which are considered to be early to middle Pliocene [Woodburne *et al.* 1985]). Moreover, Baird (1984) noted the situation in Tasmania where *Gallinula mortierii* thrives today amidst a range of native and introduced predators (Ridpath 1972). He did not, however, take into account the effect of a new predator upon unconditioned prey. The advent of the Dingo, if it indeed occurred before the disappearance of *Gallinula mortierii* from the mainland, might well have had such an effect on the latter, especially in the light of findings by Corbett & Newsome (1987) that '...the diet was functionally related to the respective abundances of all major prey species, but the relationship shifted during drought when predation on low populations was most severe...' and '...prey availability (catchability, accessability) appeared more important than prey abundances (numbers, biomass)...' although other species of birds inhabiting wetlands are taken functionally by the Dingo (i.e. Black Swan *Cygnus atratus* and Eurasian Coot *Fulica atra*: Newsome *et al.* 1983) *Gallinula mortierii* is the only species of bird to disappear from the mainland during the Holocene. Therefore, given that *G. mortierii* weighs about 2 kg, is flightless and restricted to areas with permanent water during times of drought, then it could well have been a preferred prey item of the Dingo during that period of initial contact.

But climatic change need not be dismissed completely as a contributing factor in the demise of mainland populations of *Gallinula mortierii*. After the period of optimal conditions 7000-5000 years ago (Kershaw 1981), there followed a relatively dry interval between 3000 and 2000 years ago (Frakes *et al.* 1987) that may have reduced and concentrated populations of the bird sufficiently to render it ultimately wholly vulnerable to the Dingo's predation.

If this hypothesis is correct, this is the second species whose extinction from the mainland can be associated with the arrival of the Dingo. Archer (1974) provides evidence that the mainland extinction of the Thylacine *Thylacinus cynocephalus* followed soon after the arrival of the Dingo.

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Breeding and Behaviour of the Herald Petrel *Pterodroma arminjoniana* on Raine Island, Queensland

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The Herald Petrel *Pterodroma arminjoniana heraldica* was first recorded at Raine Island in 1959 (Warham 1959), and bred there in 1982 (King 1984). Herald Petrels breed on a number of islands in the tropical Pacific Ocean and the Raine Island population, the only breeding population in Australia, is probably an extension of an unconfirmed range through the Coral Sea islands (King 1984).

Little is known of the biology of this species, except for the observations on behaviour and breeding by Gardner *et al.* (1985) at Round Island, Mauritius. The present paper summarises our observations on the Herald Petrel at Raine Island from 1980 to 1987 and provides new information on its breeding in Australia.

Methods

Raine Island (11°36′S, 144°01′E) is a large, vegetated coral cay in the far northern Great Barrier Reef and is noted for the variety and numbers of its breeding tropi-